

## RECYCLABLE FOUNDRY SAND APPLICATIONS

**DESCRIPTION:** The Contractor shall have the option of incorporating recyclable foundry sand into the contract in accordance with 105.03 and these provisions. Adherence to these provisions does not preclude applicability of local, state, and federal regulations and laws.

**MATERIALS:** This material shall be either pure recyclable foundry sand or a blend of recyclable foundry sand and natural sand and shall hereinafter be known as recyclable foundry sand, RFS. Source approval criteria shall be followed as described herein. RFS shall be in accordance with the appropriate material requirements for the respective use.

**STORAGE:** RFS stockpiled on Department property and not incorporated into the contract by placement, compaction, encasement, or other means within five calendar days shall be considered to be in storage. Prior to storing RFS on Department property, the Contractor shall have an erosion control plan approved by the Engineer. Total RFS in storage on Department property shall not exceed 7000 m<sup>3</sup> (9000 cyd) unless otherwise authorized. The maximum time in storage on Department property shall be 180 calendar days.

**SITING CRITERIA AND LIMITATIONS:**

1. Type III RFS or Type IV RFS shall not be placed within 46 meters (150 ft), horizontally, of a well, spring, or other ground source of potable water.
2. Type III RFS having placement, e.g. embankment construction, volumes greater than 500 m<sup>3</sup> (650 cys) shall not be placed below the seasonal high water table; within 30 m (100 ft), horizontally of a stream, river, lake, or reservoir; or adjacent to a wetland or other protected environmental resource area.
3. Type III RFS or Type IV RFS will not be permitted into MSE reinforced earth mass, or into backfill next to metallic pipes, or other metallic structures.
4. RFS will not be permitted as encasement material.

**RFS APPLICATIONS.**

1. Flowable backfill mix - no restrictions.
2. Borrow - RFS shall meet the requirement of Section 903.01. These materials may be used in embankment construction.
3. B-Borrow - RFS shall meet the requirements of Section 211.02(b). Hydraulic conductivity of the material shall be a minimum of 30 ft/day. The test shall be performed at 95% of maximum dry density in accordance with AASHTO T 215. The frequency of tests shall be one test per 10,000 tons of RFS per source.

These materials may be used in excavation and as a replacement of granular soils.

4. Structure Backfill - RFS shall meet the requirement of Section 904.05. Hydraulic conductivity test shall be performed at 95% of maximum dry density in accordance with AASHTO T 215. The frequency of tests shall be one test per 10,000 tons of RFS per source. Materials may be used as backfill for structures.

**CONSTRUCTION REQUIREMENTS:**

The Contractor shall be responsible for complying with the placement restrictions.

RFS requiring compaction shall be placed in accordance with the requirements relative to the respective use. If the Engineer determines that conventional compaction and control measures are ineffective, the Contractor shall arrange to conduct test strips to determine an alternate effective method. The construction of these test strips shall be as directed by the Department's Materials and Tests Division.

Nuclear gauges shall not be used to measure density unless a new calibration curve is made for the RFS and approved by the Engineer.

Where RFS is used for embankment construction greater than 500 m<sup>3</sup> (650 cys), adjoining dissimilarly classified AASHTO soil material, excluding encasement, the dissimilar soil shall be benched to prevent slope failure and to control differential settlement. RFS shall be transported in a manner that prevents the release of fugitive dust and loss of material. Adequate measures shall be taken during construction operations to control fugitive dust from RFS. Spraying with water, lime water, bituminous sprays, or other sealing sprays will be considered to be acceptable methods for dust control.

Where RFS is used for embankment construction, side slopes shall be encased with an A4, A5, A6, or A7 AASHTO classification soil to a minimum compacted soil thickness of 0.3 m (1 ft). The encasing soil shall be placed and compacted concurrently with the RFS lifts.

**BASIS OF USE:**

RFS shall be from a source on the Department's list of approved Recyclable Foundry Sand Sources. The Contractor shall provide the Engineer with one copy of the approved certification stating the RFS is an Indiana Department of Environmental Management, IDEM, waste classification Type III or IV and one copy of the Material Safety Data Sheet, MSDS, for the material. Stockpiles represented by the certification shall be clearly identified with regard to their extent and geographical location at the foundry. If required, gradation and hydraulic conductivity tests shall be performed by an approved geotechnical consultant, and a copy of the test results shall also be submitted to the Engineer.

**METHOD OF MEASUREMENT:**

RFS applications will be measured according to the respective uses.

**BASIS OF PAYMENT:**

RFS will be paid for according to the respective uses.

If the Contractor elects to use RFS it will be assumed that all impact on bid quantities or price has been accounted for prior to submitting a bid. The cost of the construction of test strips for compaction control, water, lime water, bituminous sprays, or other sealing sprays necessary for dust control, or for moisture content shall be included in the cost of the pay item.

#### APPROVAL CRITERIA FOR RECYCLABLE FOUNDRY SAND

RFS shall be the residual sand from castings used to produce ferrous metals and shall be Type III or Type IV material per the IDEM restricted waste criteria. Type III RFS shall require indemnification if any metal concentration exceeds 80% of the allowable limits. A "Typical Indemnification Clause" is included herewith. RFS shall comply with requirements as set out for the "Microtox™, ITM 215, test criteria.

The foundry shall furnish the Department's Environment, Planning and Engineering Division with a copy of the most recent testing results upon which the certification is based. This information shall include the following:

- a. a letter from IDEM indicating the waste classification,
- b. the entity performing tests,
- c. dates samples were obtained,
- d. dates samples were tested,
- e. test method used for IDEM classification,
- f. leachate and Microtox™ test results, and
- g. stockpile sampling locations, including depths and available historical testing results.

The Department reserves the right to conduct independent quality assurance tests. Based on the results of these tests, RFS may be rejected.

In addition to the aforementioned information, test results, and RFS Source Certification, a current MSDS shall be submitted for the initial approval of each RFS source. A new approval submission shall be required when re-sampling is required per 329 IAC 10-9-4(d) (3). (Per 329 IAC 10-9-4 (d) (3) for foundry waste, re-sampling is conducted: at two year intervals; whenever the process changes; or according to a schedule for re-sampling by the IDEM commissioner based on variability noted in previous sampling and other factors affecting the predictability of waste characteristics.)

To maintain approval, a summary of new stockpile test results for Microtox™ testing and the acceptance analysis will be submitted monthly indicating the required Microtox™ testing on a lot by lot basis. Tested and approved RFS stockpiles shall be properly signed for easy identification. If no new stockpiles are created in a given month, a letter indicating "no new RFS stockpiles for month/year were created" shall be sent to the Department.

The form of the certificate shall be as follows:

## RFS SOURCE CERTIFICATION

This is to certify that recyclable foundry sand, RFS, stockpiles  
geographically located as follows:

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ and produced by the  
\_\_\_\_\_ Foundry of \_\_\_\_\_ Company located  
in \_\_\_\_\_ (City), and \_\_\_\_\_ (State) from which RFS was shipped  
for use on INDOT projects is Type \_\_\_\_\_ (III or IV) material according to  
IDEM's restricted waste criteria and that the material has passed Microtox™  
test criteria. If any metal concentration exceeds 80% of the allowable limits  
for a Type III, the foundry shall provide INDOT with an acceptable  
indemnification clause. The \_\_\_\_\_ Foundry also agrees that  
processes and stockpiles associated with the production of such RFS may be  
inspected and sampled at regular intervals by properly identified  
representatives of INDOT or a duly assigned representative.

\_\_\_\_\_ (Date of signing) \_\_\_\_\_ (Foundry)

\_\_\_\_\_ (Title) \_\_\_\_\_ (Signature)

State of \_\_\_\_\_) SS: County of \_\_\_\_\_)

Subscribed and sworn to before me by \_\_\_\_\_ of the  
firm of \_\_\_\_\_ this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_\_\_.

\_\_\_\_\_ Notary Public

My Commission expires: \_\_\_\_\_

This certification has been reviewed and approved by \_\_\_\_\_

(INDOT Environment, Planning and Engineering Division representative.)

## IDEMNIFICATION CLAUSE

\_\_\_\_\_ Foundry shall indemnify, defend, exculpate, and hold harmless the State of Indiana, its officials, and employees from any liability of the State of Indiana for loss, damage, injury, or other casualty of whatever kind or to whomever caused, arising out of or resulting from a violation of the federal or Indiana Occupational Safety and Health Acts (OSHA), the Resource Conservation and Recovery Act (RCRA), the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), or any other environmental law, regulation, ordinance, order, or decree (collectively referred to hereinafter as "Environmental Laws"), as a result of the supply, testing, and application of foundry sand or other materials supplied under this Contract by \_\_\_\_\_. Foundry, whether due in whole or in part of the negligent acts or omissions of: (1) \_\_\_\_\_ Foundry, its agents, officers, or employees, or other persons engaged in the performance of the contract; or (2) the joint negligence of them and the State of Indiana, its officials, agents, or employees.

This contract shall include, but not be limited to, indemnification from: (1) any environmental contamination liability due to the supply, testing, and application of foundry sand in road base, embankments, or other projects designated by INDOT as agreed to by the parties, and (2) any liability for the clean up or removal of foundry sand, or materials incorporating such sand, pursuant to any Environmental Law.

\_\_\_\_\_ Foundry also agrees to defend any such action on behalf of the State of Indiana, to pay all reasonable expenses and attorneys fees for such defense, and shall have the right to settle all such claims. Provided, however, that no liability shall arise for any such fees or expenses incurred prior to the time that \_\_\_\_\_ Foundry shall have first received actual and timely written notice of any claim against the State which is covered by this Indemnification Agreement. If timely written notice of any claim hereunder is not received by \_\_\_\_\_ Foundry, and \_\_\_\_\_ Foundry is thereby prejudiced in its ability to defend or indemnify, then to the extent of such prejudice, this Indemnification Agreement shall be void.

This Indemnification Agreement does not create any rights in any third party, and is solely for the benefit of the State of Indiana and its agents, officials, and employees.

---